

Developmental Orthopedic Diseases in the Young Horse

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When it comes to discussing and treating Developmental Orthopedic Diseases (DOD), there is often much confusion and devastation surrounding the topic. Although not entirely preventable, with proper education and nutrition, perhaps the incidence of these diseases may be decreased.

There are several DOD which are recognized in the young horse. Many potential causes of these diseases are known; however, much is still unknown. The intent of this article is to inform the horse owner of these diseases in an effort to help prevent and manage DOD.

Development Orthopedic Diseases include the following:

- Angular limb deformities
- Phytitis
- Flexural limb deformities
- Cuboidal bone deformities
- Juvenile osteoarthritis
- Osteochondrosis Dissecans (OCD)
- Subchondral cystic lesions

Angular limb deformities

An angular limb deformity is an outward or inward deviation while looking at the limb from in front of, or behind, the horse. The most common angular limb deformity is carpus valgus or outward deviation of the front legs from the knee down. These limb deformities are exceedingly common in the newborn foal (congenital) and typically resolve without intervention. However, acquired angular limb deformities (worsening or failure to correct) need veterinary and farrier intervention.

Phytitis

Phytitis (also called "epiphysitis") is inflammation around the growth plates. This condition is mostly seen above the knee at the end of the radius bone. It is also seen at the end of the cannon bone just above the fetlock. Affected horses vary in clinical signs, ranging from enlarged growth plates of the knees/fetlocks, to stilted/tight gait, to severe lameness. While there are several causes of phytitis, excessive nutrition is usually implicated. Treatment is centered on rest and decreased nutrition (75% of energy requirement). Addressing phytitis is essential, because it may lead to permanent conformational defects.

Flexural Limb deformities

Flexural limb deformities are classified as the inability to completely extend (or straighten) a limb. These deformities are those classified as either acquired or congenital. Congenital deformities (those a foal is born with) typically involve the knee, fetlock, and hock. If the foal is able to stand, walk, and nurse unassisted, then mild flexural deformities typically resolve spontaneously. However, heavy bandaging, splinting, and administration of oxytetracycline may be warranted.



Congenital flexural limb deformity of metatarsophalangeal joint (fetlock)

Acquired flexural limb deformities are those deformities which develop after birth (up to 2 years old). The most commonly involved joints are the coffin joint, fetlock, and knee. The resulting presentations are, to varying degrees, club foot, over at the fetlock, and over at the knee. These acquired deformities commonly occur at known ages: coffin joint (3-6 months of age), knee (1-6 mo.), fetlock (9-18 mo.). The genetic propensity for rapid growth and over-feeding is the most common cause of flexural limb deformities. However, non-weight bearing conditions can also result in such deformities. Depending on the severity of the deformity, conservative management may be attempted initially. Conservative management may include early weaning, anti-inflammatory drugs, nutritional restriction, and/or toe extensions; however, surgical intervention may be required.

Cuboidal Bone Deformities

This condition most commonly involves the tarsal (hock) and/or carpal (knee) bones of the premature or underdeveloped foal. At birth, these bones haven't ossified and are therefore not able to withstand the

weight of the foal, which will likely result in the collapse of these bones. Foals must be confined and often require bandages and/or splints. Collapse of the tarsal bones is most common and will result in a cow-hocked or sickle-hocked conformation. The degree of lameness that results from the collapse usually becomes apparent later in life and predisposes the horse to juvenile osteoarthritis.

Osteochondrosis (OCD)

Bones mature and lengthen through a process where bone or joint cartilage (also called articular cartilage) replaces young growing cartilage. A failure in this process will result in joint cartilage defects (fissures, crevices, flaps, etc.) Within the joint, osteochondrosis can vary, ranging from articular cartilage surface defects to free-floating cartilage fragments (joint mice or dissecans). The most common sites for OCD are in the stifle, hock, shoulder, and fetlock.



Osteochondrosis lesion on the distal intermediate ridge of the tibia

Subchondral bone cysts

Subchondral bone cysts are fluid-filled holes found within the end of bones, primarily seen in the stifle, fetlock, pastern, coffin, and elbow joints. While subchondral bone cysts can be induced by trauma to the cartilage, they can also be another manifestation of osteochondrosis. Since both OCD lesions and subchondral bone

cysts often occur in both legs, if a lesion is found in one limb, the opposite limb should be investigated.

Historically, there has been little objective information regarding the cause(s) of osteochondrosis. However, it is now known that there is a strong connection between the incidence of osteochondrosis and growth rate and final body height/weight. It has also been shown that young horses which are overfed are more likely to develop osteochondrosis. Diets high in energy (carbohydrates) are more likely to cause OCD lesions than diets with excessive protein levels. As many breeders are aware of, there is unquestionably some degree of genetic predisposition as well. Previously, horse owners/veterinarians believed that male horses were more likely to develop osteochondrosis; however, this appears to be an inconsistent finding.

In conclusion, there are a variety of suspected and postulated causes for developmental orthopedic diseases. One thing for certain is developmental orthopedic diseases are multifactorial conditions in which one or several issues may lead to clinical lameness. Proper nutrition (complete feeds formulated for the young horse), appropriate exercise, and selective breeding may help decrease the incidence of these diseases. Your veterinarian can help you understand, prevent, and, if necessary, treat any of the developmental bone diseases that may be affecting your horse. Early recognition of the problems is often crucial. Please consult your veterinarian for additional recommendations.